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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,833	05/10/2001	Salvatore Leonardi	856063.694	6456

500 7590 12/31/2003

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EXAMINER	
ANDUJAR, LEONARDO	

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/853,833	LEONARDI, SALVATORE	
	Examin r	Art Unit	
	Leonardo Andújar	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,17,19,20 and 24-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17, 19 and 26* is/are allowed.

6)☒ Claim(s) *1-8,20,24 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Acknowledgment

1. The amendment filed on 10/10/2033, in response to the Office action mailed on 09/11/2003 has been entered. The present Office action is made with all the suggested amendments being fully considered. Accordingly, pending in this Office action are claims 1-8, 17, 19, 20 and 24-26.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Italy on 05/11/2000. The certified copy of the priority document has been received.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8, 20, 24 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Hutter et al. (US 4,980,747).

5. Regarding claim 1, Hutter (e.g. fig. 11) shows a substrate 10 wherein a buried layer 12 and an epitaxial region have been formed, and an isolation structure adapted to define a plurality of isolation wells (34, 36) for integrating the components of the

integrated device (col. 5/lls. 42-52). The isolation structure comprises a plurality of dielectrically insulated trenches defined by the sidewalls 28/30, each trench having an open bottom 32, and having only a lining of oxide 38/40 and a filling of a conducive material 53 to forma a contact region in direct contact with one of the substrate and buried layer.

6. Regarding claim 2, Hutter shows that the dielectric trenches are formed at the edges of the isolation wells in contact with the buried layers.

7. Regarding claim 3, Hutter shows that the trenches are formed in intervening areas between adjacent isolation wells in contact with the substrate.

8. Regarding claim 4 Hutter shows that the plurality of trenches are in contact with the buried layer located and are located at each edge of the isolation wells.

9. Regarding claim 5, Hutter shows that the intervening area between isolation wells includes a plurality of trenches in contact with the substrate (col. 5/lls. 42-52).

10. Regarding claim 6, Hutter shows that the plurality of trenches comprise dielectric region (38, 40) surrounding the contact regions.

11. Regarding claim 7, Hutter shows that active components integrated in the intervening regions between the plurality of trenches (col. 5/lls. 42-52).

12. Regarding claim 8, Hutter shows that the isolation structure contacts the buried regions of high or low voltage active components of the integrated device (col. 5/lls. 42-52).

13. Regarding claim 20, Hutter (e.g. fig. 11) shows isolation trench structure formed in a semiconductor substrate 10 having a buried region 12, comprising: an isolation

structure formed in the substrate to define a plurality of isolation wells (34, 36). The isolation structure comprises a plurality of trenches 26, each trench having an open bottom and sidewalls, and each trench having only a single insulating dialectic material (38, 40) to define a central cavity having an open bottom. Also, Hutter shows a conductive material 53 filling the central cavity an in contact with the substrate.

14. Regarding claim 24, Hutter (e.g. fig. 11) shows an integrated device, comprising: a substrate 10 having a buried layer 12 and an epitaxial region formed therein, and an isolation structure adapted to define a plurality of isolation wells (34, 36) for integrating the components of the integrated device therein (col. 5/lls. 42-52). The isolation structure comprises plural dielectrically insulated trenches (28, 30), each trench having an open bottom 32 and each trench filled with a conductive material 53 to form a contact region that is in direct contact with one of the substrate and the buried layer. Hutter discloses that the conductive material and substrate and buried layer further doped with a doping material of a first conductivity and first concentration (i.e. P type). Also, the buried layer doped with a second dopant (i.e. N type) of opposite conductivity than the first dopant and at a concentration higher than the concentration of the first dopant to compensate for the first dopant (col. 4/lls. 32-44). Note that the buried layer 12 was originally a P type layer.

15. Regarding claim 25, Hutter (e.g. fig. 11) shows an isolation trench structure formed in a semiconductor substrate 10 having a buried region 12, comprising: an isolation structure formed in the substrate to define a plurality of isolation wells (34, 36). The isolation structure comprising a plurality of trenches (28, 30) each trench having an

open bottom 32 to define a central cavity and lined with a single insulating dielectric material 38/40 to define a central cavity and conductor material 53 filling the central cavity and in contact with one of either the substrate and the buried region to provide a conductive path to the substrate surface. Hutter discloses that the conductive material and substrate and buried layer further doped with a doping material of a first conductivity and first concentration (i.e. P type). Also, the buried layer doped with a second dopant (i.e. N type) of opposite conductivity than the first dopant and at a concentration higher than the concentration of the first dopant to compensate for the first dopant (col. 4/lls. 32-44). Note that the buried layer 12 was originally a P type layer.

Allowable Subject Matter

16. Claims 17, 19 and 26 are allowed.

Response to Arguments

17. Applicant's arguments with respect to claims 1-8, 20, 24 and 25 have been considered but are not persuasive.

18. Applicant argues that Hutter does not show a trench having only an oxide lining and a filling of conductive material. Nonetheless, Hutter shows this limitation. Hutter (e.g. fig. 5) clearly shows that the trench 26 is lined only by silicon dioxide layers 38 and 40 (col. 5/lls. 56-57). In this case, the term "lined" is interpreted as "to cover the inner surface". Note that the layer 18 covers the trench isolation layers 38, 40 but not the trench 26. In this case, the layer 18 is considered part of the trench filling but not part of the lining material.

19. Applicant argues that Hutter does not show a conductive material, a buried layer, and substrate is doped with a first type dopant at a first concentration. Nonetheless, this limitation is considered an intermediate step. Note that the buried layer is eventually doped with a second dopant of opposite conductivity (see pg. 8/ll. 27 –pg 9/ll. 2). Therefore, the buried layer is considered to be of the second type. Hutter discloses that the conductive material and substrate are doped with a doping material of a first conductivity and first concentration (i.e. P type). Also, the buried layer is doped with a second dopant (i.e. N type) of opposite conductivity than the first dopant and at a concentration higher than the concentration of the first dopant to compensate for the first dopant. Note that the buried layer 12 was originally a P type layer (col. 4/lls. 32-44).

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

21. Papers related to this application may be submitted directly to Art Unit 2826 by facsimile transmission. Papers should be faxed to Art Unit 2826 via the Art Unit 2826 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2826 Fax Center number is **(703) 308-7722** or **–7724**. The Art Unit 2826 Fax Center is to be used only for papers related to Art Unit 2826 applications.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Leonardo Andújar** at **(703) 308-0080** and between the hours of 9:00 AM to 7:30 PM (Eastern Standard Time) Monday through Thursday or by e-mail via Leonardo.Andujar@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn, can be reached on (703) 308-6601.

23. Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 305-3900.**

24. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass (es): 257/501,505,506 and 520	12/03
Other Documentation:	
Electronic Database(s): East (USPAT, US PGPUB, JPO, EPO, Derwent, IBM TDB)	12/03

Leonardo Andújar
Patent Examiner Art Unit 2826
LA
12/23/2003

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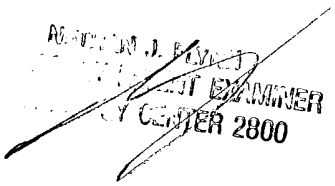
line (lĭn) *verb, transitive*
lined, lin·ing, lin s



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1. To fit a covering to the inside surface of: *a coat lined with fur.*

2. To cover the inner surface of: *Moisture lined the walls of the cave.*[ii]